

Fukushima reference. In particular, the Examiner is requested to note the relationship of the documents that were submitted supporting the declaration.

Referring to a request for quotation dated August 22, 1995, the attachments show Element A and Element B. Element A is the same as the apparatus shown in Fig. 4 of the patent application. See in particular, part number 43. The second attachment, showing Element B, is also shown in Fig. 4 of the patent application as filed. In this case refer to part number 42. Thus it is seen that the request for quotation clearly shows the lithium niobate filters described in the specification and shown in the drawings on August 22, 1995.

The August 22, 1995 fax of a request for quotation is shown to have been received and acted upon by the shipping/packing list from Virgo Optics received on September 29, 1995. In the shipping/pack list items A and items B refer back to the original order for Elements A and B, which in turn are shown in the drawings of the patent application as filed as described above. Thus, it is shown that Applicant had possessed the whole invention at least by August of 1995 and was diligently working on finding a manufacturer to provide the elements of the blur filter.

The additional supporting documents were designed to show due diligence and reduction to practice, both by completion of a prototype and by filing of the patent application. Thus it is seen that the inventor was in possession of the complete invention, the requisite means, and their interaction. Therefore it is requested that the Examiner acknowledge that the present invention predates Fukushima, and that the Fukushima be withdrawn reference.

Rejection Under 35 U.S.C. § 112

The Examiner has rejected claims 4 and 13 under 35 U.S.C. 112. The Examiner states claims 4 and 13 recite the limitation "optical filter," and that there is insufficient antecedent basis for this limitation in these claims. This rejection is respectfully traversed.

The Examiner has rejected claim 4 under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. This rejection is respectfully traversed.

Claims 4 and 13 have been amended to correct the problem with antecedent and basis noted by the Examiner. In addition, Claim 4 has been amended to conform the claim with the specification as required by the Examiner.

Rejection Under 35 U.S.C. § 103

The Examiner has rejected claims 1, 10, 11, 12 and 15 under 35 U.S.C. 103(a) as being unpatentable over Greivenkamp, Jr. '193 and Fukushima (U.S. 5,579,420). This rejection is respectfully traversed.

The prior art cited by the Examiner differs from the present invention in both structure, function and result. Greivenkamp, Jr. '193 teaches that an optical spatial frequency filter may be constructed using a pair of birefringent elements with a wave plate sandwiched between the birefringent elements. The wave plate changes the polarization state of light between the two birefringent elements. The purpose for changing the polarization state is to change the polarization state of a first color by a first amount and the polarization of a second color by a second amount so that the spatial frequency response is substantially color dependent.

The Fukushima filter removes all wavelengths except for a narrow band. This type of filter is known as a spectral filter, and is a type typically found in a multiplexing apparatus such as disclosed by Fukushima. In an apparatus of this type, portions of the beam with an undesirable wavelength are removed. Thus, the total light power is reduced by the spectral filter.

In the present invention, the birefringent uniaxial crystal spatial filter does not remove wavelengths, rather it blurs certain high frequencies of the image projected on the filter. In a complex photographic image certain features, for example, a picket fence, may produce high frequencies in a digital image. If the image is sampled at a lower frequency aliasing is produced in the resulting sampled image. The present invention, a spatial filter, blurs the higher frequencies in the image, thereby preventing aliasing in the final image. The total light power remains essentially unchanged by the filter and the blurring is achieved by redistribution of the light.

The structural differences between Fukushima and the present invention are also significant. Birefringent elements 11 and 13 in Fukushima are wedge shaped rather than "a first plane plate and at least a second plane plate" as in the present invention. The Fukushima invention also specifies an additional

elements 12 sandwiched between the two wedge shaped plates, which is a heated birefringent element, with a heater 18 for changing wave length characteristics. This structure functions differently from the structure claimed in the present invention and would not serve "to reduce undersampling artifacts" in an imaging apparatus such as a digital camera as in the present invention.

The Examiner has rejected claims 10, 11, and 12, however, these claims depend from an independent claim clearly distinguishable from the prior art and are therefore also patentable over the prior art

The Examiner has rejected claim 4 under 35 U.S.C. 103(a) as being unpatentable over Greivenkamp, Jr. '193 and Fukushima et al. (U.S. 5,646,399). This rejection is respectfully traversed.

The Fukushima '399 reference is for a tunable filter module. This filter module, which splits a first beam and a second beam, varies the center wavelength in the passband according to the center wavelength of the input light. Once again this is significantly different from the spatial filter in the present invention. The fact that Fukushima '399 mentions lithium niobate and lithium tantalate as possible materials to use in the tunable filter modulator does not make it readily obvious to use these materials in a spatial filter. A variety of materials is used in different applications throughout the optical industry; which includes microscopes, telescopes, tunable filters, spectral filters, and spatial filters. The fact that a particular material is used in one optical application does not mean that an inventor would randomly select that material for another application merely because it is used in the optical industry. In addition, the birefringent elements in Fukushima '399 are crystal wedge plates 74 and 76, which have been distinguished from the present invention above.

The Examiner has rejected claim 5 under 35 U.S.C. 103(a) as being unpatentable over Greivenkamp , Jr. '193 and Fukushima '420 as applied to claim 1 above, and further in view of Takatori et al. (U.S. 5,715,085). This rejection is respectfully traversed.

Claim 5 depends from an independent claim clearly distinguishable from the prior art. Since claim 5 adds additional limitations to a patentable independent claim, it is believed that claim 5 is patentable also.

The Examiner has rejected claim 17 under 35 U.S.C. 103(a) as being unpatentable over Greivenkamp, Jr. '193 and Fukushima '399, and further in view of Watanabe et al. (U.S. 3,784,734). This rejection is respectfully traversed.

The Watanabe et al. reference cited by the Examiner is different from the present invention as further defined in dependent claim 8 in that the rhomboidal pattern is not "rotated about an optical axis of the imaging apparatus." This distinction combined with the fact that it is a dependent claim, which adds additional limitations to an independent claim clearly distinguished from the prior art above, indicates that claim 13 is patentable over the prior art.

Conclusion

If the Examiner is of the opinion that additional modifications to the claims are deemed necessary to place the application in condition for allowance, he is invited to contact applicant's attorney at the number listed below for a telephone interview at Examiner's amendment.

APPLICANT'S ATTORNEY PLANS TO BE IN THE PATENT OFFICE ON NOVEMBER 30, 2000 AND REQUESTS THE OPPORTUNITY TO INTERVIEW THIS CASE WITH THE EXAMINER AT EITHER 10AM OR 11AM OR IN THE EARLY AFTERNOON.

If the Examiner is not persuaded by the arguments presented in this amendment, he is requested to enter the changes to the claims which correct informalities in order to place the application in better condition for an appeal.

Respectfully submitted,



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